

REMARKS

After entry of this Amendment, the pending claims are: claims 1, 2, 4-8 and 13-17. The Office Action dated February 12, 2009 has been carefully considered. Claim 12 has been canceled. Claims 3 and 9-11 were previously canceled. Claims 1, 4 and 5 have been amended. Support for the amendments to claim 1, 4 and 5 can be found throughout the Specification and Drawings and specifically in paragraph No. 19 and Fig. Nos. 1 and 2. Accordingly, no new matter has been added. Reconsideration and allowance of the pending claims in view of the above Amendments and the following remarks is respectfully requested.

In the Office Action dated February 12, 2009, the Examiner:

- objected to the Abstract for containing more than 150 words;
- objected to claim 5 for containing an informality;
- rejected claims 4 and 5 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement;
- rejected claims 1-17 under 35 U.S.C. 112, second paragraph, as being indefinite to particularly point out and distinctly claim the subject matter which Applicants regard as the invention;
- rejected claims 4 and 5 under 35 U.S.C. 112, second paragraph, as being indefinite to particularly point out and distinctly claim the subject matter which Applicants regard as the invention;
- rejected claims 1, 2, 4-7, 13 and 15 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,759,766 to Buettner-Janz *et al.* ("Buettner-Janz");

- rejected claims 8 and 12 under 35 U.S.C. 103(a) as being unpatentable over Buettner-Janz;
- rejected claim 14 under 35 U.S.C. 103(a) as being unpatentable over Buettner-Janz in view of U.S. Patent No. 5,534,030 to Navarro *et al.* (“Navarro”); and
- rejected claim 17 under 35 U.S.C. 103(a) as being unpatentable over Buettner-Janz in view of U.S. Patent No. 5,879,387 to Jones *et al.* (“Jones”).

ABSTRACT

The Abstract was objected to for containing more than 150 words. It is respectfully submitted that the Abstract has been amended to comply with the 150 word count. Withdrawal of this objection is respectfully requested.

DEPENDENT CLAIMS 4 AND 5

Claim 5 was objected to for containing an informality. Specifically, claim 5 was objected to for reciting “the first radius of curvature being different than the second radius of curvature.” In an effort to expedite prosecution of the present application, claim 5 has been amended to recite “the first radius of curvature being not equal to the second radius of curvature.” As such, it is believed that the Examiner’s objection to dependent claim 5 has been overcome. Withdrawal of this objection is respectfully requested.

Claims 4 and 5 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. In addition, claims 4 and 5 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite to particularly point out and distinctly claim the subject matter which

Applicants regard as the invention. Specifically claims 4 and 5 were rejected for containing the language “contact one another via line contact.” In an effort to expedite prosecution of the present application, the limitation “contact one another via line contact” has been deleted from claims 4 and 5. As such, it is believed that the Examiner’s rejections of dependent claims 4 and 5 under 35 U.S.C. 112 have been overcome. Withdrawal of these rejections is respectfully requested.

INDEPENDENT CLAIM 1

Claims 1-17 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, independent claim 1 was rejected for reciting “the first concave inner surface.” In an effort to expedite prosecution of the present application, independent claim 1 has been amended without prejudice to recite “the first curved inner surface.” As such, it is believed that the Examiner’s rejection of independent claim 1 under 35 U.S.C. 112, second paragraph, has been overcome. Withdrawal of this rejection is respectfully requested.

INDEPENDENT CLAIM 1

Independent claim 1 and claims 2, 4-7, 13 and 15, which are dependent therefrom, have been rejected as being anticipated by Buettner-Janz. Dependent claims 8 and 12 have been rejected as being unpatentable over Buettner-Janz. Dependent claim 14 has been rejected as being unpatentable over Buettner-Janz in view of Navarro. Dependent claim 17 has been rejected as being unpatentable over Buettner-Janz in view of Jones. With respect to claim 8, which has been canceled, this rejection is

believed to be moot. Applicants respectfully traverse the remaining rejections with respect to the remaining, above-listed claims, as amended.

Referring to Figs. 10 and 11, Buettner-Janz discloses an intervertebral disc endoprosthesis including first and second end plates 11 and a spacing piece 12. The spacing piece 12 having top and bottom surfaces. The first end plate having a first surface for contacting the top surface of the spacing piece such that the top surface and the first surface define a first cylinder-shaped movement surface. The second end plate having a second surface for contacting the bottom surface of the spacing piece such that the bottom surface and the second surface define a second cylinder-shape movement surface. The first and second cylinder-shape movement surfaces being rotationally-offset 90 degrees with respect to each other about a central axis passing through the spacing piece and the end plates.

Applicants respectfully submit that Buettner-Janz does not disclose each and every limitation of independent claim 1. Amended claim 1 is directed to an intervertebral implant having a central axis substantially parallel to or coaxial with an axis of a spinal column and recites as follows:

an upper and a lower terminal part each fitted with an outermost surface configured transversely to the central axis, said upper terminal part having a first curved inner surface and said lower terminal part having a second curved inner surface, said first and second curved surfaces being opposite one another; and a joint element configured between the terminal parts and resting in a sliding manner against the curved inner surfaces of the upper and lower terminal parts, the joint element including first and second external convex slide surfaces, the first slide surface contacting the first curved inner surface of the upper terminal part, the second slide surface contacting the second curved inner surface of the lower terminal part, **the first curved inner surface and the first slide surface forming a first joint rotatable about a first axis of rotation, the first axis of rotation being perpendicular to the central axis when in an initial position, the second curved inner surface and the second slide surface forming a second joint rotatable about a second axis of rotation, the second axis of rotation intersecting the central axis at an acute angle α , the second axis of rotation being**

spaced apart from the first axis of rotation by a distance A as measured along the central axis, wherein $0 < \text{distance } A < 18 \text{ mm}$. (Emphasis added).

Applicants respectfully submit that there is no disclosure, teaching, or suggestion in Buettner-Janz of an intervertebral implant including an upper terminal part having a first curved inner surface, a lower terminal part having a second curved inner surface, and a joint element configured between the upper and lower terminal parts and resting in a sliding manner against the curved inner surfaces of the upper and lower terminal parts. The joint element including first and second external convex slide surfaces, the first slide surface contacting the first curved inner surface of the upper terminal part, the second slide surface contacting the second curved inner surface of the lower terminal part, wherein the first curved inner surface and the first slide surface form a first joint rotatable about a first axis of rotation, *the first axis of rotation being perpendicular to the central axis* when in an initial position. The second curved inner surface and the second slide surface form a second joint rotatable about a second axis of rotation, *the second axis of rotation intersecting the central axis at an acute angle α . The second axis of rotation being spaced apart from the first axis of rotation by a distance A as measured along the central axis, wherein $0 < \text{distance } A < 18 \text{ mm}$.*

Specifically, Buettner-Janz, at the most, discloses an intervertebral disc endoprosthesis including first and second end plates 11 and a spacing piece 12. The spacing piece 12 having top and bottom surfaces for contacting the first and second end plates, respectively, such that a first cylinder-shaped movement surface is defined between the first end plate and the top surface of the spacing piece and a second cylinder-shaped movement surface is defined between the second end plate and the bottom surface of the spacing piece. The first and second cylinder-shaped movement surfaces being rotationally-offset by 90 degrees with respect to one another.

Buettner-Janz does not disclose, teach or suggest a first joint rotatable about a first axis of rotation wherein the first axis of rotation is perpendicular to the central axis when in an initial position and a second joint rotatable about a second axis of rotation wherein the second axis of rotation intersects the central axis at an acute angle α such that the second axis of rotation is spaced apart from the first axis of rotation by a distance A as measured along the central axis, wherein $0 < \text{distance } A < 18 \text{ mm}$.

Furthermore, Applicants respectfully submit that it would not be obvious to a person of ordinary skill in the art to modify Buettner-Janz to include a first joint rotatable about a first axis of rotation wherein the first axis of rotation is perpendicular to the central axis when in an initial position and a second joint rotatable about a second axis of rotation wherein the second axis of rotation intersects the central axis at an acute angle α such that the second axis of rotation is spaced apart from the first axis of rotation by a distance A as measured along the central axis.

As stated in the specification of the present application, the prosthesis of Buettner-Janz was specifically designed to exhibit symmetry of rotation. As such, the axis of rotation of the Buettner-Janz prosthesis, laterally and ventrally/dorsally, are the same. In contrast, the intervertebral implant of independent claim 1 was specifically designed to overcome the disadvantages of using symmetrical axes of rotation as disclosed by Buettner-Janz. In doing so, it is respectfully submitted that the Applicants through their own effort and expense derived the implant as claimed in independent claim 1. Specifically, it was the Applicants who derived an intervertebral implant offering a particular defined axis of rotation for the lateral displacement of the spinal column, and for the bending and stretching of

the adjacent vertebrae wherein the axes of rotation cross each other at a distance A along the central axis and subtending different angles with the central axis.

Accordingly, it is respectfully submitted that the Examiner has not identified any reason why a person of ordinary skill in the art would modify the symmetrical axes of rotation of Buettner-Janz to include a first joint rotatable about a first axis of rotation wherein the first axis of rotation is perpendicular to a central axis of the implant when in an initial position and a second joint rotatable about a second axis of rotation wherein the second axis of rotation intersects the central axis at an acute angle α and wherein the second axis of rotation is spaced apart from the first axis of rotation by a distance A as measured along the central axis, wherein $0 < \text{distance A} < 18 \text{ mm}$ other than it would teach all of the elements of independent claim 1. (*See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. _____ (2007) “[a] patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently known, in the prior art ... important to identify a reason that would have prompted a person of ordinary skill in the art to combine the elements as the new invention does.”) *It is respectfully submitted that without the benefit of the Applicants’ disclosure, it would not be obvious for one of ordinary skill in the art to completely redesign the prosthesis of Buettner-Janz to incorporate the recited orientation for the axes of rotation.*

Therefore, it is respectfully submitted that Buettner-Janz does not disclose, teach, or suggest all of the limitations of independent claim 1. Accordingly, Applicants respectfully submit that claim 1, as amended, is allowable over Buettner-Janz. Withdrawal of this rejection and allowance of independent claim 1 is respectfully requested.

Furthermore, as claims 2, 4-8 and 13-17 all depend from independent claim 1, it is submitted that these claims are equally allowable for at least this reason. Withdrawal of these rejections and allowance of claims 2, 4-8 and 13-17 is also respectfully requested.

With respect to claim 14 which was rejected under 35 U.S.C. 103(a) as being unpatentable over Buettner-Janz in view of Navarro, it is respectfully submitted that Navarro does not overcome the short comings of Buettner-Janz. Navarro was cited for the proposition that it would be obvious to incorporate an external surface of the implant comprising a titanium grid. Without addressing the merits of this argument and/or the combination, it is respectfully submitted that, for at least the above-identified reason, neither Buettner-Janz nor Navarro, either alone or in combination, disclose, teach or suggest all of the limitations of dependent claim 14 and, specifically, the above-listed features of claim 1. Thus, it is respectfully submitted that dependent claim 14 is allowable over Buettner-Janz and Navarro. Withdrawal of this rejection and allowance of dependent claim 14 is respectfully requested.

With respect to claim 17 which were rejected under 35 U.S.C. 103(a) as being unpatentable over Buettner-Janz in view of Jones, it is respectfully submitted that Jones does not overcome the short comings of Buettner-Janz. Jones was cited for the proposition that it would be obvious to make at least one of the terminal parts from a three-element part including a cover plate, a joint pan and an elastic spacer. Without addressing the merits of this argument and/or the combination, it is respectfully submitted that, for at least the above-identified reason, neither Buettner-Janz nor Jones, either alone or in combination, disclose, teach or suggest all of the limitations of dependent claim 17 and, specifically, the above-listed features of claim 1. Thus, it is respectfully submitted that dependent claim 17 is allowable

over Buettner-Janz and Jones. Withdrawal of this rejection and allowance of dependent claim 17 is respectfully requested.

CONCLUSION

Based upon the above-listed amendments and remarks, Applicants respectfully submit that the present application, including claims 1, 2, 4-8 and 13-17, is in condition for allowance and such action is respectfully requested.

A fee of \$810.00 is believed due for this submission for the filing of a Request for Continued Examination. The Commissioner is authorized to charge this and any other fee which may now or hereafter be due in this application to Deposit Account No. 19-4709.

In the event that there are any questions, or should additional information be required, please contact Applicants' attorney at the number listed below.

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Respectfully submitted,

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